CA|

Energy Efficiency Strategic Plan

Lighting Action Plan 2013-2015

Developed with Stakeholder Input

California Public Utilities Commission

Energy Division

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Action Plan Funding

The key initiatives in this Action Plan represent what stakeholders have prioritized as those that will result in direct or indirect energy savings to help achieve the state's energy policy goals. However, these initiatives are not mandated and do not have any funding earmarked by the CPUC for execution at this time. Possible funding sources for work on these initiatives may come from investor-owned utility (IOU) programs, publicly owned utility programs, state and federal government programs, public-private partnerships and other potential sources.

Revised LAP – WORKING DOCUMENT
Version: 11/5/2013

INTRODUCTION

Background

This revised and updated Lighting Action Plan for 2013-2015 is designed to help achieve the goals described in the California Long Term Energy Efficiency Strategic Plan (the "Strategic Plan") adopted by California Public Utilities Commission (CPUC) in 2008[1] and expanded in 2010 to include a lighting chapter.[2] The Commission identified four key functions that action plans serve to enhance strategic plan goals: (a) specify and prioritize key actions to achieve milestones in the Plan, (b) identify champions to pursue these actions, (c) track progress on each strategy, and (d) communicate the status of overall progress for a given chapter.

The original Strategic Plan included energy-efficient lighting as a small component of both the residential and commercial chapters. However, with lighting accounting for approximately 22 percent of the state's residential electricity consumption, over 35 percent of the state's non-residential electricity consumption, and roughly 44 percent of investor-owned utility (IOU) program energy savings (kWH), stakeholders recognized the need to develop a vision for a transformed lighting market in California.[3] Evidence that market adoption is primarily concentrated in compact fluorescent lamps (CFLs) and high-bay fluorescent technologies—as well as recent studies suggesting substantially lower than anticipated savings from these measures—further highlight the importance of strategic plan lighting initiatives.

As such, through a series of workshops, a broad stakeholder group helped create a lighting chapter for the Strategic Plan. This group included more than 100 individuals and represented more than 60 organizations including regulatory agencies, public and investor-owned utilities, architectural firms, construction companies, consulting and engineering firms, environmental organizations, labor organizations, lighting manufacturers, local government entities, technology research organizations, state and private colleges and universities, and others.[4] Their efforts yielded a new lighting chapter for the Strategic Plan and subsequent Action Plans that were organized around the vision of transforming California's lighting market to achieve a 60 to 80 percent reduction in statewide electric lighting energy consumption by 2020 by delivering advanced lighting systems to all buildings.[5]

In June 2011, the CPUC published a Lighting Action Plan for 2010-2012 that represented the output of lighting stakeholder efforts, designed to implement the high-priority market transformation strategies identified in the lighting chapter. This document represents the next phase of implementation for the lighting chapter's vision. Like the plan before it, this revised 2013-2015 Lighting Action Plan is a

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[1] CPUC, 2011. California Long Term Energy Efficiency Strategic Plan, January 2011 Update. Online at http://www.cpuc.ca.gov/NR/rdonlyres/A54B59C2-D571-440D-9477-3363726F573A/0/CAEnergyEfficiencyStrategicPlan_Jan2011.pdf.

[2] CPUC, 2010. D.10-09-047, *Decision Adopted Lighting Chapter of Energy Efficiency Strategic Plan*. Online at http://docs.cpuc.ca.gov/PublishedDocs/WORD_PDF/FINAL_DECISION/123970.PDF

[3] CPUC, 2010. Fact Sheet: Energy Efficiency Statewide Lighting Program. July 2010. Online at http://www.cpuc.ca.gov/NR/rdonlyres/46A859A7-3568-43B7-B4DC-400F73C9521A/0/EE12Lighting0710rev.pdf.

[4] Please see pages 2 – 7 of this document for a list of Lighting Action Plan stakeholders.

[5] CPUC, 2010. Lighting Chapter: California Long Term Energy Efficiency Strategic Plan. Online at http://www.cpuc.ca.gov/NR/rdonlyres/BE058656-3913-4DDD-92D5-60E82DD6AF0C/0/Lightingchapter_CAEnergyEfficiencyStrategicPlan_Jan2011.pdf.

stakeholder-driven effort to build on progress made in 2010-2012 and further advance the lighting goals of the Strategic Plan.

Organization of This Document

In 2012 and early 2013, the Energy Division again consulted with stakeholders to establish a baseline against which to track progress toward achieving the lighting chapter's vision. Below, the "Baseline Analysis" section provides an overview of that effort as well as a process to determine how much of the 60 to 80 percent reduction could be achieved through business-as-usual activities versus how much remains to be accomplished through activities outlined in the Lighting Action Plan. Following the baseline discussion, the "2013-2015 Action Plan" section reviews the critical activities that stakeholders have prioritized to be accomplished during this timeframe to keep California on a trajectory to meet the Strategic Plan's 2020 lighting goals. Finally, the document closes with a summary of next steps.

BASELINE ANALYSIS

The lighting chapter sets forth a vision for the lighting in California which, if accomplished, will achieve a 60 to 80 percent reduction in statewide electric lighting energy consumption by 2020. To track progress toward this vision, it was first necessary to establish a baseline year against which to measure that progress. In 2012, the Energy Division selected 2010 as the baseline year because that was the current utility program year when the CPUC adopted the lighting chapter.

Having established the baseline year, the next task was to estimate electric lighting energy consumption for the baseline year and project this through 2020. Finally, the magnitude of the gigawatt-hours (GWh) represented by a 60 to 80 percent reduction target was then computed from the 2020 forecast.

To do this, the Energy Division contracted with Navigant Consulting, Inc., which used results from the California Energy Commission's (CEC) Integrated Energy Policy Report demand forecast model to project electric lighting energy consumption through 2020.[6] As shown in Figure 1 below, projected lighting energy consumption in California IOU territories in 2020 is approximately 51,000 GWh. To accomplish the lighting chapter's vision, California needs to reduce this projected consumption by 28,000 to 37,000 GWh (representing 60 to 80% respectively).

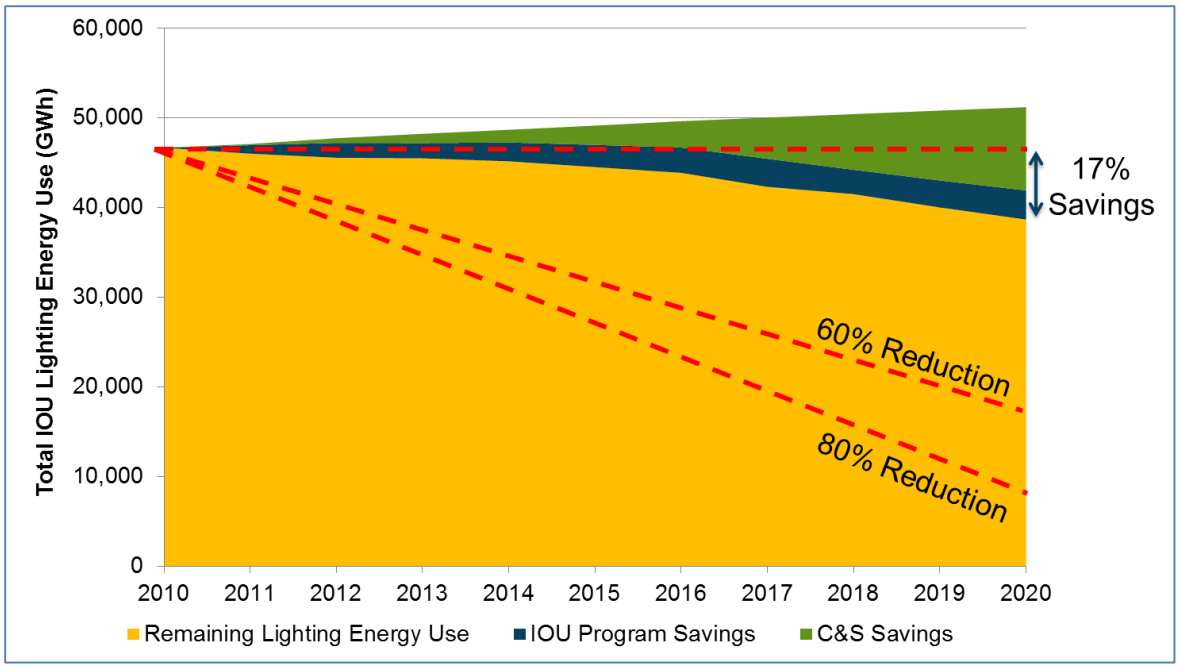
The final task was to determine what portion of the 28,000 to 37,000 GWh reduction in lighting energy consumption may be achieved by "business-as-usual" activities not already captured in the CEC demand forecast. This remainder represents the gap in savings that the LAP is intended to fill. Again with assistance from Navigant, the Energy Division developed assumptions regarding the projected energy savings expected to result from the CEC's codes and standards (C&S) efforts and from the IOUs' energy-efficiency programs.[7] In the figure below, the green area represents projected savings from codes and standards and the blue area represents projected savings from IOU programs. Together, these efforts are expected to reduce projected 2020 energy consumption by 17 percent relative to 2010 energy use (accounting for approximately 8,000 GWh of the target energy reduction). Based on these conservative estimates of "business-as-usual" activities, the additional activities in the Lighting Action Plan need to yield more than 20,000 GWh in energy savings before 2020 to achieve the lighting chapter's vision of a 60

[6] The baseline scenario assumes all IOU rebate programs cease after 2010 and that no new codes and standards affecting lighting measures come into effect after 2010.

[7] Savings from codes and standards and IOU programs were obtained using a modified version of the *California 2013-2024 IOU Potential Model* developed by Navigant as part of the 2011 CPUC potential study (*Analysis to Update Energy Efficiency Potential, Goals, and Targets for 2013 and Beyond.* May 2012)

to 80 percent reduction in electrical lighting energy consumption. This is a particularly ambitious objective even if more savings come from codes and standards or IOU program activities.

Figure 1. Projected California IOU Territory Electric Lighting Energy Consumption, 2010—2020



The 2013-2015 Lighting Action Plan identifies seven strategies and 17 initiatives that stakeholders have prioritized for action, beginning in 2013, to help shape future lighting program, policy and market initiatives in California to help achieve the lighting chapter's vision. The Energy Division will attempt to quantify how much savings can be attributed to each initiative in order to track their individual contributions towards this vision.

2013-2015 Action Plan

Goal 1 – Policy

Overview

Stakeholders will address Goal 1 through efforts related to two strategies:

- Strategy 1: Scale and align state codes and standards to address the goals articulated in the Lighting Action Plan.
- Strategy 2: Establish a baseline and method for quantifying how each initiative contributes to the reduction in electric lighting consumption.

Aligning codes and standards is an important strategy because of the lengthy building code approval cycle. There is little window of opportunity to impact code requirements and there are likely only two code update opportunities before 2020. With regard to strategy 2, there must be a way to quantify all the activity from the Lighting Action Plan to enable tracking of progress toward the 2020 vision.

Policy

Goal 1 of the lighting chapter is to "[d]evelop and implement coordinated policies, procedures, and other market interventions that eliminate barriers, accelerate lighting market transformation in California and provide incentives for best practice lighting technologies and systems."

Action Plan

Strategy 1: Scale and align state, municipal and other codes and standards to address the goals articulated in the Lighting Action Plan.

The three initiatives below outline the planned activities to accomplish this strategy. It is imperative to acknowledge the time frame for code adoption and to recognize that work must be done now to influence which lighting technologies are accepted into code in 2017 (and future cycles). Furthermore, it would be advantageous to partner with California cities and counties to push "reach codes" that go beyond Title 24 requirements. Finally, the last initiative for this strategy tries to address an apparent disconnect between best practice lighting technologies and the requirements for building rating systems. Current rules allow a building to achieve certification through the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) rating system but still not include the best practice lighting technologies. The third initiative seeks to change that.

The following champions[8] have volunteered to support these efforts:

- Angi Xanders, DNV KEMA Energy & Sustainability
- Lisa Parker, Southern California Edison (SCE)
- Michael Mutmansky, TRC
- Michael Nguyen, SDG&E (San Diego Gas and Electric)

[8] "Champions" or key initiative leads are individuals and/or organizations that have self-identified and volunteered to pursue a specific initiative. Frequently, these champions are leveraging activities with which they are already involved to help accomplish the initiative.

Initiative	Key Actions	Timeline
1-1: Provide input to CEC 2017 Title 24 code process to ensure that viable best practice lighting technologies are adopted into code	Conduct literature review of potentially viable lighting technologies (e.g., lighting controls) for adoption into code	Complete
	Develop list of recommended changes to code or technologies to include in new code	Complete
	Document code change recommendations	Q3 2013
	Provide input to code process based on above document	Q3 2013
1-2: Encourage cities and counties to ensure inclusion of best practice lighting technologies and systems beyond Title 24 requirements into local building codes ("reach codes")	Research and document examples of how some communities have included best practice lighting technologies and systems into local building codes ("reach codes")	Q3 2013
	Meet with representatives from 2-3 cities or counties to discuss possibility of improved lighting codes and share research results	Q4 2013
	Develop logic model diagram that shows how a technology moves into codes and standards	Q1 2014
	Conduct follow-up outreach to each targeted community to support code adoption	2014
1-3: Advocate for changes to green building rating systems (e.g., CalGreen, LEED) to encourage incorporation of best-practice lighting technologies and systems into all green buildings	Understand the relevant rating system organization's internal processes for making changes	Complete
	Conduct a literature review regarding typical lighting systems in existing green buildings certified by the relevant rating organization(s)	Q3 2013
	Prepare examples of possible improvements to these typical scenarios showing benefit-cost analyses	Q3 2013
	Meet with rating system representatives to discuss possible benefit from changes to incorporate best practice lighting technologies and systems into green buildings	Q4 2013
	Conduct ongoing follow-up with rating system representatives to keep this issue current with them	2014

Strategy 2: Establish a baseline and method for quantifying how each initiative contributes to the reduction in electric lighting energy consumption.

As of early 2013, consultants from Navigant Consulting, Inc. have created a tool that shows baseline statewide electric lighting energy consumption through 2020. The tool also shows projected savings contributions from the IOUs' energy-efficiency programs and updates to statewide codes and standards for lighting (see the "Baseline Analysis" section above). The second part of this strategy involves quantifying the contributions from the initiatives outlined in this Lighting Action Plan. To do this, the Navigant team will explore modifying the existing tool to incorporate scenario analyses to demonstrate how various actions may affect the reduction targets—for example, how energy savings will change if the light-emitting diode (LED) lamp adoption rate were accelerated or if pricing dropped by a specific increment.

The following champions have volunteered to support these efforts:

- Amul Sathe, Navigant Consulting, Inc.
- Jeorge Tagnipes, CPUC Energy Division

Initiative	Key Actions	Timeline
2-1: Create a tool to establish the baseline electric lighting energy consumption against which to track Lighting Action Plan progress	Engage an independent third party to leverage the CPUC's 2012 Goals & Potentials Study (and subsequent updates) and estimate baseline electric lighting energy consumption for 2010	Complete
	Project energy consumption forward through 2020 – both including and excluding projected savings from IOU energy efficiency programs and codes & standards	Complete
	Update results as model inputs become available (e.g., for street lights, LED lamps, and updated information regarding the impacts of codes & standards)	Q3 2013
	Share results and obtain feedback from a stakeholder group including representatives from the CPUC, other government agencies, utilities, and industry	Q3 2013
2-2: Update the baseline tool enable scenario analyses for different technologies and markets	Review ability to update existing baseline model with different scenarios (e.g., based on product adoption timelines and/or pricing) to help understand the market potential and the effects of each scenario on energy savings	Q3 2013
	Review and prioritize available information for development of scenarios	Q4 2013
	Build scenario analysis capabilities within the model	Q1 2014
	As available, continue to share results from model with utility program teams and other stakeholders; encourage utilities to use results for program planning purposes	Ongoing

Goal 2 – Best Practices

Overview

Stakeholders will accomplish Goal 2 through efforts related to three strategies:

- Strategy 3: Identify best practice lighting technologies and systems and incorporate into utility programs.
- Strategy 4: Educate and train lighting contractors and other professionals to properly design, install and maintain advanced lighting systems.
- Strategy 5: Explore ways to increase the participation of public entities (including cities and municipalities) in current IOU programs that offer incentives and financing for lighting measures.

Best Practices

Goal 2 of the lighting chapter is to "[d]efine and advance best practices for design, installation, operation and maintenance of integrated systems to achieve sustainable lighting solutions for all spaces."

Incorporating best practice lighting technologies and systems into utility programs will result in access to (and increased affordability of) these solutions to end-users. Targeted educational efforts will also ensure that end-users have access to adequately-trained professionals who can properly design, install, and maintain these systems. And through increased awareness of the IOUs' energy-efficiency programs, state agencies will have the opportunity to "lead by example" and provide accessible demonstrations of best practice lighting technologies and systems for California residents.

Action Plan

Strategy 3: Identify best practice lighting technologies and systems and incorporate into utility programs.

The five initiatives below outline the planned activities to accomplish this strategy. These initiatives address several of the key barriers to incorporating best practice lighting technologies and systems into utility programs, including a review of the best ways to integrate these technologies into the utilities' portfolios and generating ideas regarding the most appropriate methods for calculating the energy savings associated with these technologies. Another initiative addresses development of pilot programs that give the utilities an opportunity to run small-scale tests of different program strategies, product incentives, and program delivery mechanisms before scaling up to larger, core utility programs. Finally, this strategy provides an opportunity to educate the Energy Division, IOUs and other stakeholders regarding the pros and cons of open-sources and proprietary lighting communication protocols to inform discussions regarding the implications for IOU programs.

The following champions have volunteered to support these efforts:

- Adam Parrish, Crossroad Services (on behalf of TCP)
- Alex Alzugaray, Energy Solutions
- Dave Bend, Waypoint Building Group
- Jennifer Burns, Philips Lighting Company
- Kandice Castellino, OSRAM SYLVANIA
- Lela Manning, SDG&E
- Robert Hick, Leviton Lighting
- Vireak Ly, SCE

Initiative	Key Actions	Timeline
3-1: Identify and publicize current list of best practice lighting technologies and systems	Convene a diverse group of stakeholders to review current set of best practice lighting technologies and systems	Q3 2013
	Summarize the current set of best practice lighting technologies and systems in a brief, easily-understood document	Q4 2013
	Solicit stakeholder feedback on the draft set of best practice lighting technologies and systems and finalize document	Q4 2013
	Publish best practices document and update periodically	Ongoing
3-2: Provide a straw proposal to the Energy Division for how to best incorporate advanced lighting efficiency measures (including lighting systems) into utility programs as part of an integrated demand side management approach	Convene group of utility program and technology experts to identify key barriers to technologies identified in Initiative 3-1	Q1 2014
	Document key barriers and options for overcoming barriers	Q1 2014
	Present draft results and obtain comment from a regional stakeholder group (e.g., Emerging Technologies Coordinating Council)	Q2 2014
	Finalize proposal and present to Energy Division staff	Q2 2014
3-3: Develop a straw proposal for the most accurate way to determine ex-ante savings estimates for advanced lighting controls systems; encourage implementation into IOU program analysis	Develop short list of high-potential technologies and applications	Q1 2014
	Develop a list of necessary DEER inputs for these technologies	Q1 2014
	Outline an approach to quantifying the necessary DEER inputs	Q2 2014
	Present draft results and obtain stakeholder comments	Q3 2014
	Finalize proposal and present to Energy Division staff and other relevant stakeholders	Q4 2014
3-4: Develop pilot programs that support best practices and encourage lighting market transformation	Coordinate with the IOUs' Statewide Lighting Innovation Program team and RD&D advisory group (from Goal 4) to develop a list of technologies to include in pilot programs	Q1 2014
	With the same group, review and discuss possible program implementation strategies for pilot programs	Q1 2014
	Convene periodic meetings to refine and prioritize the technology/implementation strategy lists and obtain updates on pilot program activities	Ongoing
3-5: Prepare a white paper outlining the pros and cons of open-source and proprietary lighting communication protocols to inform discussions regarding the implications for IOU programs	Create an outline of the white paper and agree upon the elements that should be included	Q3 2013
	Review outline and make assignments	Q4 2013
	According to outline, document the pros and cons associated with open-source and proprietary lighting communication protocols	Q1 2014
	Present draft results and obtain stakeholder comments	Q1 2014

Initiative	Key Actions	Timeline
	Finalize results and present to Energy Division staff and other relevant stakeholders	Q2 2014

Strategy 4: Educate and train lighting contractors and other professionals to properly design, install and maintain advanced lighting systems.

Ensuring an adequate workforce of highly-educated and well-trained lighting designers, installers, contractors, and maintenance professionals will increase access to (and ultimately, satisfaction with) best practice lighting technologies and systems among end-users. These educational efforts will also better position lighting professionals to describe the benefits of these technologies to end-users, increasing the ultimate likelihood of sale and installation of these technologies. This strategy provides an opportunity to identify the primary barriers to workforce and training among lighting professionals so that these barriers can be more effectively addressed by the organizations that offer training or those that employ a highly skilled workforce. The strategy will also result in an inventory of training efforts in California so that stakeholders can identify and address gaps in the current offerings.

The following champions have volunteered to support these efforts:

- Mark Ouellette, ICF International
- Vireak Ly, SCE

Initiative	Key Actions	Timeline
4-1: Identify gaps in current training offerings and barriers to participation and encourage development of training to address these shortcomings	Create a matrix of current training activities showing their sponsors, target audiences, locations, objectives, and content	Complete
	Examine matrix to identify gaps in availability of training for specific audiences, individuals in specific geographic areas, and specific training topics or content	Q3 2013
	Compile a list of current and past EM&V studies and other relevant materials that shed light on training barriers	Q3 2013
	Review and summarize materials regarding gaps and barriers	Q4 2013
	Share results with relevant stakeholders (such as representatives from the Energy Division, California utilities, and training organizations) and discuss possible changes to existing training (or new training) to fill gaps and address barriers	Q4 2013

Strategy 5: Explore ways to increase participation of public entities (including cities and municipalities) in current utility programs that offer incentives and financing for lighting measures.

Public entities include our educators, regulators, healthcare providers, and other important organizations. These entities are uniquely positioned to play a leadership role in maximizing the

efficiency of their lighting systems and serving as accessible demonstrations of these technologies in real-world applications. This strategy addresses the need to increase acceptance of best practice lighting technologies and systems among public agencies by leveraging utility programs to address the primary barrier of participation for these organizations—funding. By increasing awareness of utility program offerings within this critical sector, stakeholders may achieve increased participation by public entities and thus increased adoption of best practice lighting technologies and systems among this group.

The following champions have volunteered to support these efforts:

- Jennifer Lawrence, Cree
- Patricia Spinneberg, Los Angeles Department of Water & Power
- René Burger, Philips Lighting Company

Initiative	Key Actions	Timeline
5-1: Conduct information-sharing meetings with relevant representatives of public agencies, ED, utilities, and other stakeholders to ensure awareness of and access to utility programs	Research decision-making responsibilities of individuals responsible for renovation decisions at public agencies and generate a list of those individuals	Q4 2013
	Convene a meeting (or series of meetings) involving these individuals, utility and ED representatives, and other stakeholders to share information about existing programs, barriers to participation in those programs, and possible ways to overcome those barriers	Q4 2013
	Conduct ongoing outreach and follow-up to support (to the extent possible) increased participation of public agencies in utility lighting programs	2014

Goal 3 – End-User Demand

Overview

Stakeholders will accomplish Goal 3 through efforts related to one broad strategy:

- Strategy 6: Relying on input from a diverse group of stakeholders (including the CPUC, other government agencies, utilities, and industry), determine the most effective messaging for different end-user groups; and develop a coordinated marketing approach to educate end users and encourage adoption of best practice lighting technologies and systems.

End-User Demand

Goal 3 of the lighting chapter is to "[c]reate widespread end user demand to purchase and use best practice lighting technologies and systems."

Action Plan

Strategy 6: Relying on input from a diverse group of stakeholders (including the CPUC, other government agencies, utilities, and industry), determine the most effective messaging for different end-user groups; and develop a coordinated marketing approach to educate end users and encourage adoption of best practice lighting technologies and systems.

Ensuring that end-users are well-informed about best practice lighting technologies and systems is arguably the first step toward increasing adoption of these technologies. To achieve this outcome, this strategy relies upon three initiatives. The first initiative is focused on understanding what end users like and dislike about their current lighting systems—as well as what they want or need from their lighting—to so that stakeholders can appropriately tailor the marketing messages for these lighting technologies to different end user groups. To address the financial barriers to adoption, the second initiative focuses on creation and publication of an inventory of financing options available to end users interested in best practice lighting technologies and systems. Finally, the third initiative relates to creating and distributing the appropriate marketing messages for a coordinated marketing approach among the relevant stakeholders.

The following champions have volunteered to support these efforts:

- Alice Liddell, ICF International
- Alton Kwok, SDG&E
- Andrea Nylund, Eco Hatchery LLC
- Andrea Riemann, Pacific Gas and Electric (PG&E)
- Brian Smith, PG&E
- Caroline Chen, SCE
- Christopher Lubeck, OSRAM SYLVANIA
- Glen Whitehead, Cree
- Juan Carlos Blacker, Independent Consultant

Initiative	Key Actions	Timeline
6-1: Institute a statewide study to assess end-user wants, needs, and desirability of currently-installed lighting technologies; publicize results to help tailor product marketing and messaging	Review and synthesize results of completed residential and non-residential studies to identify and document end-user wants and needs	Q4 2013
	Present results in a digestible form to Lighting Action Plan champions, the IOU Lighting Market Transformation Program team, and other stakeholder groups to support development of targeted messaging to address end-user wants and needs	2014
6-2: Create and publicize an inventory of financing options for best practice lighting technologies and systems	Investigate and catalogue financing options (including utility resources and others)	Complete
	Review available literature on customer demand for financing and loan packages for energy-efficient upgrades (lighting-specific, if possible)	Q3 2013
	Prepare a brief white paper summarizing demand for and availability of financing options	Q4 2013
	Work with ED staff and broader stakeholder group to determine possible venues in which to share white paper results with a broader audience	2014
6-3: Create and distribute the most effective messaging through a coordinated marketing approach to educate end users and encourage adoption of best practice lighting technologies and systems	Determine best message for each user group	Q4 2013
	Determine best partners and outlets for a coordinating marketing approach and engage them into Lighting Action Plan	2014
	With partners, develop marketing and education platform to encourage adoption of best practice lighting technologies and systems.	2014

Goal 4 – RD&D

Overview

Goal 4 will be accomplished through efforts related to one key strategy:

- Strategy 7: Develop a unified vision to guide statewide lighting RD&D efforts.

> **RD&D**
>
> Goal 4 of the lighting chapter is to "[d]evelop research, development and demonstration (RD&D) networks to create, test and deliver the lighting solutions needed to transform California's lighting market and achieve ZNE goals."

Action Plan

Strategy 7: Develop a unified vision to guide statewide lighting RD&D efforts.

The CEC's and IOU's Electric Procurement Investment Charge (EPIC) programs, as well as the IOU's Emerging Technology Programs, are the main RD&D efforts in the state; as a result, California's lighting market would greatly benefit if the priorities in the goals of the Lighting Action Plan are closely coordinate with other RD&D efforts in the state. This strategy aims to unify the statewide RD&D efforts around a common vision.

This strategy will also work to define the kinds of advanced lighting system demonstration projects that support the unified vision of the Lighting Action Plan, Emerging Technology Program, and EPIC efforts such that the range of technologies or space types that are included in the demonstrations address research gaps. Stakeholders could utilize the IOUs' Lighting Market Transformation Program's Lighting Solutions Workbook and/or the list of prioritized technologies being generated by Lighting Action Plan Initiative 3-1 as a starting point to help identify technologies with strong potential.

The two initiatives below outline the planned activities to accomplish this strategy. The following champions have volunteered to support these efforts:

- Abhijeet Pande, TRC
- Brian Fortenbery, Electric Power Research Institute
- Chris Corcoran, PG&E
- Dario Moreno, SCE
- Dave Bend, Waypoint Building Group
- Frank Sharp, Electric Power Research Institute
- Jennifer Burns, Phillips
- Jennifer Lawrence, Cree
- Kosta Papamichael, California Lighting Technology Center
- Michael Nguyen, SDG&E
- Dustin Davis, California Energy Commission
- Katherine Burggraf, California Lighting Technology Center

Initiative	Key Actions	Timeline
7-1: Develop an RD&D roadmap and support structure	Convene a diverse group of stakeholders (including representatives from the CPUC, other government agencies,	Complete

Initiative	Key Actions	Timeline
	utilities, and industry) to form an RD&D working group and identify necessary elements of the roadmap	
	Identify EPIC lighting projects and align their research goals with the goals of the Lighting Action Plan	Complete
	Establish and agree upon milestones to track progress within the roadmap and establish a timeline for roadmap implementation based on RD&D projects	Q4 2013
	Review, finalize, publish, and promote the roadmap	Q4 2013
	Continue collaboration with CEC and other agencies to ensure that RD&D funding opportunities (e.g., EPIC) align with the goals of the Lighting Action Plan	Ongoing
	Hold periodic stakeholder meetings to share RD&D roadmap progress and results	Ongoing
7-2: Develop demonstration projects for advanced lighting systems in a range of space types	Identify the proper "range of space types" and contextual characteristics for the demonstrations	Q4 2013
	Coordinate with EPIC, utility emerging technologies programs, and other stakeholders to develop guidelines for demonstration projects	Q2 2014
	Identify funding sources for demonstration programs	Q2 2014
	Develop demonstration project proposals	Q3 2014
	Implement and evaluate demonstration projects; share results with stakeholders	2015

Next Steps

This revised and updated Lighting Action Plan identifies steps that stakeholders agreed should begin in 2013 to help accomplish California's 2020 vision for lighting. To ensure incremental progress and to allow for mid-course corrections, the Energy Division will hold a series of quarterly check-ins with lighting stakeholders throughout the year.

2013-2014

In June 2013, the Energy Division held a webinar to allow champions to report on progress toward advancing their action plan initiatives. The webinar focused on initiatives with action items that commenced during Q2 2013. Similarly, for initiatives with action items slated to begin during Q3 2013, there will be another quarterly meeting during fall 2013, and so on. The Energy Division will continuously update implementation status of key initiatives as more information is added from the quarterly check-in meetings.

Post-2014 Lighting Action Plan

The Energy Division expects further revisions to the Lighting Action Plan once the CPUC adopts the post-2014 portfolio of IOU energy-efficiency programs. As more market information becomes available and as technologies advance, another set of strategies and initiatives may be required to further advance the goals of the lighting chapter of the Strategic Plan forward into 2020.